Space Weather Forecast

Issued on Friday, 09 February 2024 at 01:18 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Moderate activity likely with isolated Moderate-class flares/R1-R2 Radio Blackouts. Chance of isolated Strong-class flares/R3 Radio Blackouts.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate, with isolated Moderate class flares, the peak flare at 08/2355 UTC from a moderately sized and magnetically complex region just over on the southwest limb. There are ten sunspot regions on the visible disc, however the majority of these are small and relatively simple. The most significant region remains a large and magnetically very complex region in the southeast.

No Earth-directed Coronal Mass Ejections (CMEs) have been observed during the past 24 hours, but several CMEs from the last few hours will need further analysis once imagery becomes available.

Solar Wind / Geomagnetic Activity: Solar winds have predominantly been at slightly elevated levels, with occasional periods of elevated wind speeds early in the period. The Interplanetary Magnetic field (IMF) was weak, with the important north-south component fluctuating weakly. Geomagnetic activity was Quiet (Kp 0-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles remained at background levels.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate activity likely, with isolated Moderate flares and a chance of Strong flares. The flare risks reduce slightly as the active region around the southwest limb moves further onto the far side of the Sun, however the large and complex region in the southeast and new or returning regions maintain a likelihood of Moderate activity.

Solar Wind / Geomagnetic Activity: Wind speeds are expected to continue to decline from slightly elevated levels towards background. A CME that left the Sun on 06 Feb may provide a slight glancing blow late Day 1 (09 Feb) or early Day 2 (10 Feb). Geomagnetic activity is expected to be mostly Quiet (Kp 0-2), with a chance of Unsettled intervals (Kp 3) and a very slight chance of a G1/Minor Geomagnetic Storm interval (Kp 5), should any CME enhancement occur.

Energetic Particles / Solar Radiation: The count rate of energetic particles has a chance of rising above background in response to any large flares that may occur, with a chance of reaching S1/Minor Solar Radiation Storms at first, gradually decreasing.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	10	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	70	60	60	60
Very Active	R3 to R5 X	No	20	15	15	15

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	20	20	15	15
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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